ACTA
STOMATOLOGICA
CROATICA
www.ascro.hr

Acta stomatol Croat. 2017;51(1):3-12.
DOI: 10.15644/asc51/1/1

IZVORNI ZNANSTVENI RAD
ORIGINAL SCIENTIFIC PAPER

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Povezanost dentalne traume, anksioznosti i agresivnog ponašanja kod djece dobi između 7 i 14 godina na Kosovu

The Relationship Between Dental Trauma, Anxiety and Aggression Behavior in 7 to14 Year old Children in Kosovo

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Sažetak

Svrha istraživanja: Dentalni strah negativno utječe na ishod terapije. Svrha ovog istraživanja bila je različitim ljestvicama procijeniti dentalnu anksioznost djece te odrediti korelaciju između ljestvice anksioznosti i ljestvice agresivnog ponašanja s obzirom na to jesu li djeca pretrpjela dentalnu traumu ili nisu. **Materijali i metode:** Ciljana populacija bila su 254 djeteta s pretrpljenom dentalnom traumom (59,1 % dječaci) i 251 dijete bez dentalne traume (46,6 % dječaci) u dobi između 7 i 14 godina te njihovi roditelji. Svi su pregledani tijekom 2015. i 2016. godine. Psihometrička mjerenja korištena u ovom istraživanju uključivala su nekoliko upitnika. Rezultati su obrađeni X^2 testom, Studentovim t-testom, jednosmjernom ANOVA-om te Pearsonovim koeficijentom korelacije. Za provjeru pouzdanosti i valjanosti mjerenja odabran je Cronbachov alfa test. Predodređena razina značajnosti bila je postavljena na 0,05. **Rezultati:** Svi korišteni testovi pokazali su zadovoljavajuću pouzdanost i valjanost ljestvice. Srednja vrijednost anksioznosti bila je značajno veća u slučaju djece s pretrpljenom dentalnom traumom. Ta su djeca imala i veću srednju vrijednost na ljestvici agresivnog ponašanja (OAS). Djevojčice su u svim upitnicima imale značajno veću srednju vrijednost anksioznosti u odnosu prema dječacima. Srednja vrijednost agresivnog ponašanja bila je u obje skupine značajno veća kod dječaka negoli kod djevojčica ($p < 0,001$). Vjerojatnost za pojavu agresivnog ponašanja ako su djeca pretrpjela dentalnu traumu smanjuje se za 0,95 kada se prosječna vrijednost na DVSS-SV ljestvici poveća za jedinicu, a veća je za 1,04 kada se srednja vrijednost anksioznosti poveća za jedinicu. **Zaključak:** Srednja vrijednost anksioznosti bila je značajno veća kod djece koja su pretrpjela dentalnu traumu, kod djevojčica te one djece koja su se više bojala medicinskih intervencija (CMFQ). Veću srednju vrijednost na ljestvici agresivnog ponašanja (OAS) imala su djeca s pretrpljenom dentalnom traumom i dječaci. Pronađena je značajna korelacija između razine dentalne anksioznosti i agresivnog ponašanja djece. Vjerojatnost za pojavu agresivnog ponašanja povećava se kako se povećavaju srednje vrijednosti na svakoj ljestvici procjene anksioznosti, ali ne značajno, osim za S-DAI vrijednosti.

Zaprimljen: 17. siječnja 2017.
Prihvaćen: 1. ožujka 2017.

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Ključne riječi
zub, ozljede; strah od stomatologa; agresija; dijete

Uvod

Dentalni strah specifična je vrsta anksioznosti i vrlo često stanje u stomatološkoj ordinaciji (1). To je normalna emocionalna reakciju povezana sa specifičnim vanjskim prijetećim stimulansom tijekom stomatološke terapije. Dentalna anksioznost nespecifičan je predosjećaj straha kada dijete očekuje da će se nešto dogoditi i povezana je s abnormalnim stanjima (2).

Dentalni strah može prouzročiti ozbiljne probleme i pacijentu i liječniku – izbjegavanje brige o oralnom zdravlju (odgađanjem posjeta), nemirno ponašanje tijekom stomatološke terapije (3), negativno utječe na ishod terapije (4) te stresno djeluje na samog terapeuta, što može štetno utjecati na oralno zdravlje djeteta (5).

Etiologija dentalnoga straha i dentalne anksioznosti sadržava više čimbenika (6). Čimbenici koji imaju veliku ulogu u

Introduction

Dental fear is defined as specific anxiety, with predisposition for negative experience in the dental surgery (1), this condition is common in dental practice. Dental fear represents normal emotional reaction to specific external threatening stimulus in the dental situation. Dental anxiety is a nonspecific feeling of apprehension, where the child is evoked and prepared for something to happen, associated with abnormal conditions (2).

Dental fear may cause serious problems for patient and dentist, which lead to avoidance of dental care or disruptive behavior during treatment (3), and negatively affect treatment outcomes (4). Dental fear has a negative impact on the treatment outcome, because it often leads to cancelled dental visits, may have a stressful influence on the dentist during

nastanku dentalnoga straha su prijašnje bolno dentalno iskustvo, pretrpljena dentalna trauma, osobnost djeteta, dentalni strah kod roditelja, godine, spol i socijalno podrijetlo (7, 8). Ranije neugodno (traumatično) iskustvo utječe na pacijentovu percepciju stomatološkog okoliša, a povezano je sa strahom od nepoznatog ili strahom od ozljede. Utjecaj straha zbog već doživljenih neugodnih iskustava povezan s novonastalim strahom iz novih stomatoloških situacija stvara preuranjenu anksioznost (9). Dijete ima dovoljno vremena da iz svojih neugodnih iskustava stvori negativne misli i očekivanja vezana za novu stomatološku intervenciju (10).

Prevalencija dentalnoga straha u djetinjstvu, zbog metodoloških ili kulturalnih varijabli, pokazuje velike varijacije u opsegu između 3 i 43 posto (6, 11). Djevojčice i mlađa djeca pokazuju veći strah, za razliku od dječaka i starije djece.

Postupci u stomatološkoj terapiji imaju različit stupanj utjecaja na razinu straha koji izazivaju kod djece. Među najbolnije postupke koji mogu izazvati visok stupanj dentalne anksioznosti ubrajamo injiciranje lokalnog anestetika, brušenje zuba te endodontsku terapiju (12). Razina anksioznosti prije postupka usko je povezana s njihovim ponašanjem tijekom obavljanja postupka (13).

Svrha ovog istraživanja bila je različitim ljestvicama procijeniti dentalnu anksioznost djece te odrediti korelaciju između ljestvice anksioznosti i ljestvice agresivnog ponašanja s obzirom na to jesu li djeca pretrpjela dentalnu traumu ili nisu.

Materijali i metode

Pacijenti/ispitanici

U ispitivani uzorak bila su uključena 254 djeteta s pretrpljenom dentalnom traumom (59,1 % dječaka) i 251 dijete bez dentalne traume (46,6 % dječaka) u dobi između 7 i 14 godina. Dolazili su na liječenje na Stomatološki fakultet Kliničkoga centra na Kosovu, u Zavod za dječju i preventivnu stomatologiju u Prištini između 2015. i 2016. godine.

Postupak

Djeca koja su bila upućena na Stomatološki fakultet radi daljnje evaluacije dentalne traume pohađala su škole u pet općina: Podujevo, Peja, Ferizaj, Gjilan i Kamenica. Upitnike prevedene na albanski jezik popunila su tijekom njihova prvog posjeta. Za mlađu djecu, koja nisu bila sposobna odgovarati, upitnici su bili prilagođeni za jednog od njihovih roditelja. Svim roditeljima bila je objašnjena svrha istraživanja prije nego što su potpisali informirani pristanak.

Upitnici

Za psihometrička mjerenja korišteni su CDAS, PDAS, CFSS-DS, D-DAI, CMFQ, DVSS-SV te OAS (tablica 1.).

a dental appointment, with detrimental consequences for the child oral health (5).

Etiology of dental fear and dental anxiety in children is multifactorial (6). The factors which play an important role in the onset of dental fear are: previous painful dental experiences, experience of dental trauma, child personality, parental dental fear, age, gender, and social background (7, 8). Previous traumatic experience has influence on a patient's perception of the dental environment, related to fear of the unknown or injury. The effect of residual fears from past traumatic experiences, combined with the upcoming fears in a new dental situation, results as anticipatory anxiety (9). From previous painful experience, the child has enough time to create negative thoughts and expectations regarding the new dental intervention (10).

The prevalence of childhood dental fear, due to either methodological or cultural variables, shows considerable variations range between 3% to 43% (6, 11). Girls and younger children are more fearful than boys and older children.

The dental procedures have a different range according to the level of the fear they provoke in the child patient. The most painful dental procedures are: injection, drilling the tooth and endodontic procedures, which can evoke more dental anxiety in children (12). Child's level of anxiety before procedure is closely related to their behavior during dental interventions (13).

The aim of this study was to evaluate dental anxiety among children with different measurement scales, with the aim of getting more precise and thorough estimations, as well as correlation between anxiety scale and aggression scale in children with/or without dental trauma.

Material and Methods

Patients

The study sample included 254 children experience with dental trauma (59.1% male), and 251 children without dental trauma (46.6% male), between 7 and 14 years, referred to the University Dentistry Clinical Center of Kosovo, at the Pediatric and Preventive Dentistry Department, in Prishtina, during 2015-2016.

Procedure

After referral to clinic, the children and their parents were asked to participate by completing Albanian translated version of the questionnaires. The children with trauma we have found in schools of five municipalities: Podujeva, Peja, Ferizaj, Gjilane and Kamenica. Children's are referred to the University Dentistry Clinical Center of Kosovo for further evaluation. The questionnaires were completed by child at their first visit. As the younger children were not able to answer the questionnaire by themselves, the scale was adjusted to be answered by one of each child's parents. All parents were well informed about the purpose of the study before signing the consent form.

Questionnaires

For psychometric measures we used: CDAS, PDAS, CFSS-DS, S-DAI, CMFQ, DVSS-SV and OAS (see table 1).

Tablica 1. Upitnici u istraživanju
Table 1. Questionnaires used in the study

Upitnik • Questionnaire	Mjerenje • Measuring	Broj stavaka • No. of Items	Vrijednost (min. – maks.) • Value (min-max)	Kategorija • Category
CFSS-DS (Children's Fear Survey Schedule – Dental Subscale)	Dentalna anksioznost kod djece • Child's dental anxiety	15	15-75	<30 = niska • low 31-39 = srednja • mild >39 = visoka • high
PDAS (Parental Corah Dental Anxiety Scale)	Dentalna anksioznost kod djece • Child's dental anxiety	4	4-20	4-8 = niska • low 9-12 = srednja • mild 13-20 = visoka • high
CDAS (Child's Corah Dental Anxiety Scale)	Dentalna anksioznost kod djece • Child's dental anxiety	4	4-20	4-8 = niska • low 9-12 = srednja • mild 13-20 = visoka • high
CMFQ (Broome's Child Medical Fear Questionnaire)	Strah od medicinskog postupka kod djece • Child's fear of medical treatment	12	12-36	<26 = niska • low 26-30 = visoka • high
DVSS-SV (Dental Visit Satisfaction Scale-Swedish Version)	Zadovoljstvo stomatologom kod djece • Child's satisfaction with the dentist	10	10-50	<35 = niska • low 35-50 = visoka • high
S-DAI (Dental Anxiety Inventory – short version)	Dentalna anksioznost kod djece • Child's dental anxiety	9	9-45	<12 = niska • low 12-33 = srednja • mild >33 = visoka • high
OAS (Overt Aggression Scale)	Agresivno ponašanje kod djece • Child's aggression	4	4-16	<6 = niska • low 6-16 = visoka • high

Statistička analiza

Korišten je IBM-ov SPSS statistički paket (verzija 23) i Sigma Plot verzija 11.0. Podatci su analizirani ovisno o varijablama upitnika prema spolu, godinama i skupinama (s pretrpljenom dentalnom traumom ili bez dentalne traume). Rezultati su obrađeni X^2 testom, Studentovim t-testom i jednosmjernom ANOVA-om. Za evaluaciju valjanosti mjerenja te za ispitivanje povezanosti između testova korištenih za procjenu anksioznosti i agresivnog ponašanja djece upotrijebljen je Pearsonov koeficijent korelacije. Predodređena razina značajnosti bila je postavljena na 0,05. Za provjeru pouzdanosti mjera korelacije odabran je Cronbachov alfa test.

Rezultati

U skupini s pretrpljenom dentalnom traumom bio je veći postotak dječaka (59,1 % prema 46,6 %, Chi test = 7,35, df = 1, p = 0,007) (tablica 2.).

Ukupna srednja dob bila je veća u skupini s pretrpljenom dentalnom traumom (11,76+/-1,76 prema 11,10+/-2,01, t-test = 3,95, df = 503, p < 0,001). Značajna razlika u srednjoj dobi bila je između dječaka s pretrpljenom dentalnom traumom i djevojčica bez dentalne traume (p < 0,001), te također

Statistical analysis

We used the IBM SPSS Statistics software (version 23) and Sigma Plot version 11.0 for analysis. The data were analyses regarding the questionnaire variables according to the gender, age and study groups (with and without dental trauma) and tested with the X^2 test, Student's t-test and one-way ANOVA. Pearson's correlation coefficient was used to evaluate the validity of the measures and to study interrelationship between the tests used in assessing children's anxiety and aggression. The predetermined significance levels were set at 0.05. Cronbach's alpha was used to analyze internal consistency reliability.

Results

The percentage of boys was higher in group with dental trauma (59.1% vs. 46.6%, Chi-test=7.35, df=1, p=0.007) (Table 2).

The total mean age was higher in group with dental trauma (11.76+/-1.76 vs. 11.10+/-2.01, t-test=3.95, df=503, p<0.001). The significant difference in mean age were between males with dental trauma and females without den-

Tablica 2. Raspodjela ispitanika prema spolu – vezano za dentalnu traumu
Table 2. Distribution of subjects based on gender, related to dental trauma

Spol • Sex	S pretrpljenom dentalnom traumom • With dental trauma		Bez dentalne traume • Without dental trauma	
	Učestalost • Frequency	%	Učestalost • Frequency	%
Muški • Male	150	59.1	117	46.6
Ženski • Female	104	40.9	134	53.4
Ukupno • Total	254	100.0	251	100.0

Chi-square = 7,35 s jednim stupnjem slobode (df). (P = 0,007) • Chi-square = 7.35 with 1 degrees of freedom (df). (P = 0.007)

Tablica 3. Srednja dob ispitanika prema spolu – vezano za dentalnu traumu
Table 3. Mean age of subjects based on gender, related to dental trauma

Spol • Sex	S pretrpljenom dentalnom traumom • With dental trauma			Bez dentalne traume • Without dental trauma		
	N	Mean	SD	N	Mean	SD
Muški • Male	150	12.00	1.66	117	11.11	2.07
Ženski • Female	104	11.41	1.86	134	11.08	1.96
Ukupno • Total	254	11.76	1.76	251	11.10	2.01

SD = Standardna devijacija • Standard deviation, N – broj pacijenata • number of patients

All Pairwise Multiple postupci usporedbe (Tukeyev Test) • All Pairwise Multiple Comparison Procedures (Tukey Test):

Izvor varijacija • Source of Variation	DF	SS	MS	F	P
Između skupina • Between Groups	3	76.881	25.627	7.242	<0.001
Preostalo • Residual	501	1772.874	3.539		
Ukupno • Total	504	1849.754			
Usporedba • Comparison	**Diff of Means**	**p**	**q**	**P**	**P<0.05**
MT vs. FNT	0.918	4	5.805	<0.001	Da • Yes
MT vs. MNT	0.889	4	5.418	<0.001	Da • Yes
MT vs. FT	0.587	4	3.456	0.069	Ne • No
FT vs. FNT	0.331	4	1.906	0.532	Ne • No

MT = dječaci s pretrpljenom dentalnom traumom • Male with dental trauma; MNT = dječaci bez dentalne traume • Male without dental trauma; FT = djevojčice s pretrpljenom dentalnom traumom • Female with dental trauma; FNT= djevojčice bez dentalne traume • Female without dental trauma.

Tablica 4. Pouzdanost korištenih testova u istraživanju
Table 4. Reliability of the tests used in a study

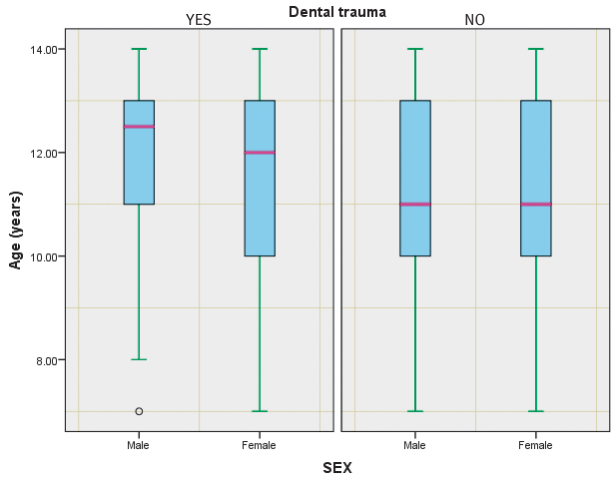
Upitnik • Questionnaire	S pretrpljenom dentalnom traumom • With dental trauma	Bez dentalne traume • Without dental trauma
	Cronbach alfa koeficijent • Cronbach alpha coefficients	Cronbach alfa koeficijent • Cronbach alpha coefficients
CFSS-DS	0.974**	0.959**
PDAS	0.968**	0.906**
CDAS	0.943**	0.914**
CMFQ	0.906**	0.863**
DVSS-SV	0.733*	0.817**
S-DAI	0.991**	0.966**
OAS	0.961**	0.815**

** vrlo pouzdan • highly reliable; * pouzdan • reliable

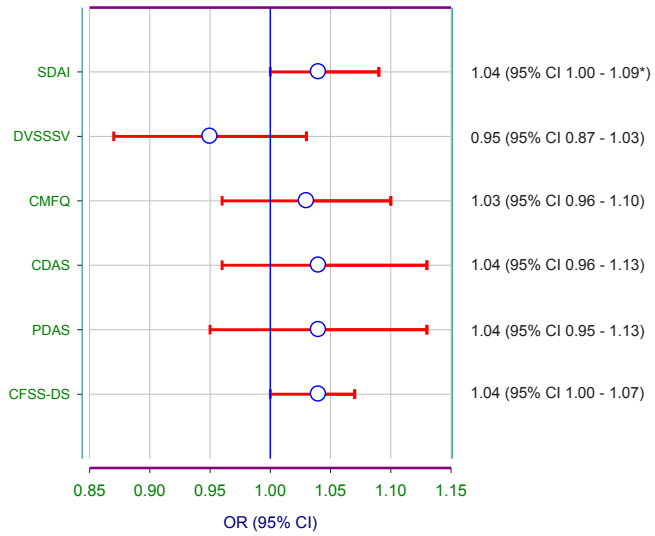
Tablica 5. Pearsonov koeficijent korelacije između korištenih testova u istraživanju
Table 5. Pearson's correlation coefficients between tests used in the study

Usporedne skupine • Compare groups		CFSS-DS	PDAS	CDAS	CMFQ	DVSS-SV	OAS	S-DAI
S pretrpljenom dentalnom traumom • With Dental Trauma (n=254)	CFSS-DS	1	.825**	.864**	.869**	.369**	.256**	**.875****
	PDAS	.825**	1	.843**	.775**	.381**	.123*	.834**
	CDAS	.864**	.843**	1	.841**	.426**	.179**	.819**
	CMFQ	.869**	.775**	.841**	1	.371**	.161**	.832**
	DVSS-SV	.369**	.381**	.426**	.371**	1	**-.037**	.424**
	OAS	.256**	.123*	.179**	.161**	-.037	1	.249**
	S-DAI	.875**	.834**	.819**	.832**	.424**	.249**	1
Bez dentalne traume • Without Dental Trauma (n=251)	CFSS-DS	1	.796**	.842**	.906**	.090	-.043	.839**
	PDAS	.796**	1	.878**	.765**	.023	-.040	.857**
	CDAS	.842**	.878**	1	.812**	-.050	-.013	.834**
	CMFQ	.906**	.765**	.812**	1	.168**	-.050	.858**
	DVSS-SV	.090	.023	-.050	.168**	1	.016	.095
	OAS	-.043	-.040	-.013	-.050	.016	1	-.063
	S-DAI	.839**	.857**	.834**	.858**	.095	-.063	1

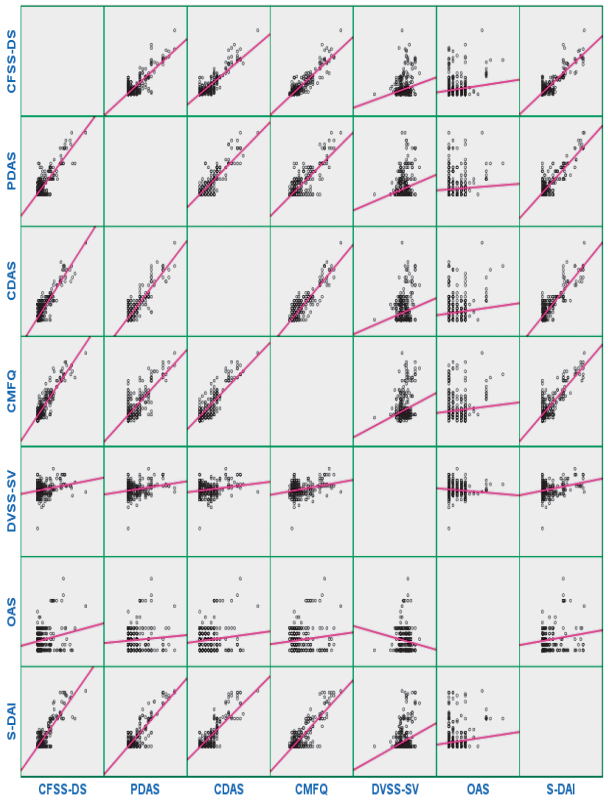
** Korelacija je značajna na razini od 0,01 (dvosmjerno) • Correlation is significant at the 0.01 level (2-tailed)
* Korelacija je značajna na razini od 0,05 (dvosmjerno) • Correlation is significant at the 0.05 level (2-tailed)



Dijagram 1. Srednja dob ispitanika prema spolu – vezano za dentalnu traumu
Diagram 1. Mean age of subjects based on gender, related to dental trauma



Dijagram 3. Logistička regresijska analiza; vjerojatnost za pojavu agresivnog ponašanja kod djece – vezano za vrijednosti različitih testova korištenih u istraživanju
Diagram 3. Logistic Regression Analysis. Odds for aggressive behavior related to different tests used in the study



Dijagram 2. Korelacijska matrica za pacijente s pretrpljenom dentalnom traumom
Diagram 2. Inter-Item Correlation Matrix for patients with dental trauma

između dječaka s pretrpljenom dentalnom traumom i dječaka bez dentalne traume (p < 0,001) (tablica 3. i dijagram 1.).

U skupini s pretrpljenom dentalnom traumom izmjerene su veće vrijednosti Cronbachova alfa koeficijenta za S-DAI (0,991), CFSS-DS (0,974), PDAS (0,968) i OAS (0,961), a niže vrijednosti za DVSS-SV (0,733). U skupini bez dentalne traume izmjerene su veće vrijednosti Cronbachova alfa koeficijenta za S-DAI (0,966), CFSS-DS (0,959), CDAS (0,914) i PDAS (0,906), a niže za OAS (0,815). Svi korišteni testovi imali su zadovoljavajuću pouzdanost i valjanost ljestvice (tablica 4.).

U skupini s pretrpljenom dentalnom traumom, u analizi testova za mjerenje anksioznosti, najveća korelacija bila je između CFSS-DS-a i S-DAI-a (0,875). Pearsonov koeficijent korelacije testiranih varijabli bio je značajan na razini od 0,01, također između PDAS-a i OAS-a na razini značajnosti od 0,05 (r = 0,123). Negativan međuodnos izmjeren je između OAS-a i DVSS-SV-a (-0,037) (tablica 5. i dijagram 2.).

U skupini bez dentalne traume najveća korelacija bila je između CFSS-DS-a i CMFQ-a (0,906). Pearsonov koe-

tal trauma (p<0.001); also significant difference was between males with dental trauma and males without dental trauma (p<0.001) (Table 3 and Diagram 1).

In children with dental trauma the higher Cronbach alpha coefficient were calculated for S-DAI (0.991), CFSS-DS (0.974), PDAS (0.968), and OAS (0.961); the lower Cronbach alpha values were computed for DVSS-SV (0.733). In children without dental trauma the higher Cronbach alpha coefficient were calculated for S-DAI (0.966), CFSS-DS (0.959), CDAS (0.914) and PDAS (0.906); the lower Cronbach alpha values were computed for OAS (0.815). All used test has satisfactory reliability and validity of the scale (Table 4).

Between the tests measuring children's anxiety, in the group with dental trauma, the strongest correlation was between CFSS-DS and S-DAI (0.875). The Pearson's correlation coefficients show a significant correlation at the 0.01 level between tested variables; the correlation is significant at the 0.05 level between PDAS vs OAS (r=0.123). The negative interrelation was found between the OAS and DVSS-SV (-0.037) (Table 5 and Diagram 2).

Tablica 6. Srednje vrijednosti u korištenim testovima u istraživanju
Table 6. Mean scores of tests used in the study

Upitnik • Questionnaire	Spol • Sex	S pretrpljenom dentalnom traumom • With dental trauma	p	Bez dentalne traume • Without dental trauma	p
		Mean+/-SD		Mean+/-SD	
CFSS-DS	Muški • Male	19.23+/-6.30	0.006*	17.86+/-6.51	0.66
	Ženski • Female	22.17+/-10.72		18.20+/-5.64	
	Ukupno# • Total#	20.44+/-8.50		18.04+/-6.05	<0.001*
PDAS	Muški • Male	4.89+/-1.76	<0.001*	5.03+/-1.50	0.28
	Ženski • Female	6.74+/-3.96		5.31+/-2.40	
	Ukupno • Total	5.65+/-3.01		5.18+/-2.03	0.042*
CDAS	Muški • Male	6.81+/-2.62	0.007*	6.63+/-2.27	0.89
	Ženski • Female	7.91+/-3.87		6.59+/-2.50	
	Ukupno • Total	7.26+/-3.23		6.61+/-2.39	0.01*
CMFQ	Muški • Male	16.29+/-3.02	0.003*	15.46+/-2.58	0.48
	Ženski • Female	17.79+/-4.90		15.69+/-2.50	
	Ukupno • Total	16.90+/-3.96		15.58+/-2.53	<0.001*
DVSS-SV	Muški • Male	34.69+/-2.93	0.047*	36.29+/-2.94	0.74
	Ženski • Female	35.45+/-3.07		36.42+/-3.19	
	Ukupno • Total	35.00+/-3.00		36.36+/-3.07	<0.001*
S-DAI	Muški • Male	11.31+/-5.35	0.003*	10.55+/-3.72	0.025*
	Ženski • Female	14.22+/-10.01		12.02+/-6.14	
	Ukupno • Total	12.50+/-7.73		11.33+/-5.20	0.048*
OAS	Muški • Male	2.93+/-2.58	<0.001*	1.68+/-1.61	0.003*
	Ženski • Female	1.70+/-1.91		1.10+/-1.46	
	Ukupno • Total	2.43+/-2.40		1.37+/-1.56	<0.001*

* značajno • significant;
# za ukupnu srednju vrijednost korišten je t-test u usporedbi srednjih vrijednosti između skupine s pretrpljenom dentalnom traumom i bez dentalne traume • For total mean score t-test was used to compare means between groups with and without dental trauma

Tablica 7. Logistička regresijska analiza; vjerojatnost agresivnog ponašanja kod djece vezana za vrijednosti različitih testova korištenih u istraživanju
Table 7. Logistic Regression Analysis. Odds for aggressive behavior in children related to values of different tests used in the study

Ind. varijable • Ind. Variable	Koeficijent • Coefficient	Omjer vjerojatnosti • Odds Ratio	5 % donji koef. • 5% Conf. Lower	95 % gornji koef. • 95% Conf. Upper	P vrijednost • P value
Constant	-0.23	0.79	0.38	1.65	0.53
CFSS-DS	0.03	**1.04**	1.00	1.07	0.06
Constant	0.24	1.27	0.74	2.20	0.39
PDAS	0.04	**1.04**	0.95	1.13	0.41
Constant	0.17	1.18	0.63	2.23	0.61
CDAS	0.04	**1.04**	0.96	1.13	0.35
Constant	0.001	1.00	0.32	3.12	0.998
CMFQ	0.027	**1.03**	0.96	1.10	0.431
Constant	2.34	10.33	0.49	216.99	0.13
DVSSSV	-0.05	**0.95**	0.87	1.03	0.22
Constant	-0.07	0.93	0.55	1.59	0.80
SDAI	0.04	**1.04**	1.00	1.09	0.04*

* značajno • significant

ficijent korelacije bio je značajan na razini od 0,01 za većinu varijabli za mjerenje anksioznosti kod djece. Negativan međuodnos izmjeren je između OAS-a i varijabli za mjerenje anksioznosti kod djece: CFSS-DS-a, PDAS-a, CDAS-a, CMFQ-a i S-DAI-a (r = -0,043, -0,04, -0,013, -0,05, -0,063, tim redom) te između CDAS-a i DVSS-SV-a (r = -0,05) (tablica 5.).

Srednja vrijednost anksioznosti bila je značajno veća ako su djeca pretrpjela dentalnu traumu za razliku od one bez toga iskustva za CFSS-DS (p=0,001), PDAS (p=0,042), CDAS (p=0,01), CMFQ (p<0,001) i S-DAI (p=0,048). Srednja vrijednost DVSS-SV-a bila je značajno veća kad je riječ o djeci bez dentalne traume (p < 0,001). Djeca s pretrpljenom dentalnom traumom imala su veću srednju vrijednost na ljestvici za agresivno ponašanje (OAS) za razliku od one bez toga iskustva (2,43+/-2,40 prema 1,37+/-1,56, p < 0,001). Djevojčice su u svim upitnicima imale značajno veću srednju vrijednost anksioznosti za razliku od dječaka. Srednja vrijednost agresivnog ponašanja bila je u obje skupine značajno veća kod dječaka za razliku od djevojčica (p < 0,001 i 0,003, tim redom) (tablica 6.).

Vjerojatnost za pojavu agresivnog ponašanja u slučaju djece koja su pretrpjela dentalnu traumu (n = 245) smanjuje se za 0,95 kada se srednja vrijednost na DVSS-SV ljestvici poveća za jedinicu (OR = 0,95, 95 % CI 0,87-1,03, P = 0,22), a poveća se za 1,04 kada se srednja vrijednost S-DAI-a poveća za jedinicu (OR = 1,04, 95 % CI 1,00-1,09, P = 0,04). Vjerojatnost da će se pojaviti agresivno ponašanje također se povećava za 1,04 kada se srednja vrijednost CFSS-DS-a, PDAS-a, CDAS-a i CMFQ-a poveća za jedinicu, ali ne značajno (tablica 7. i dijagram 3.).

Rasprava

Dentalna anksioznost ozbiljan je problem s negativnim utjecajem na oralno zdravlje djece. Predloženo je mnogo različitih vrsta mjerenja za procjenu dentalnoga straha i anksioznosti. Budući da je riječ o kompleksnom fenomenu s više čimbenika, vrlo je teško procijeniti pravu prirodu dentalne anksioznosti (6). Zato su psihometrička mjerenja korištena u ovom istraživanju uključivala nekoliko upitnika. Anksioznost djece i roditelja može se procijeniti na ljestvicama Child's Fear Survey Schedule (CFSS-DS), Corah Dental Anxiety (CDAS, PDAS) te Dental Anxiety Inventory - kraća verzija (S-DAI). Strah od medicinskog postupka može se izmjeriti upitnikom Broome's Child Medical Fear Questionnaire (CMFQ). Agresivno ponašanje djece može se evaluirati na ljestvici Overt Aggression (OAS). Socijalno-ekonomski status može se evaluirati mjerenjem ISP-indeksa (Hollingshead Index of Social Position), a odnos dijete-stomatolog na švedskoj inačici ljestvice zadovoljstva dentalnim posjetom (Dental Visit Satisfaction Scale-Swedish Version – DVSS-SV) (1, 14, 15, 16). Da bi se dobile što točnije i temeljite procjene dječje anksioznosti, potrebno je kombinirati različite ljestvice.

CFSS-DS sastoji se od 15 točaka na 5-Likertovoj ljestvici (1 = uopće se ne bojim do 5 = jako se bojim) s minimalno 15, a maksimalno 75 bodova. Ta ljestvica koristila se u istraživanjima u više zemalja. Prema Aartmanu i suradnicima (1),

In the group without dental trauma, the strongest correlation was between CFSS-DS and CMFQ (0.906). The Pearson's correlation coefficients show a significant correlation at the 0.01 level between majorities of variables measuring children's anxiety. The negative interrelation was found between the OAS and variables measuring children's anxiety: CFSS-DS, PDAS, CDAS, CMFQ, and S-DAI (r=-0.043, -0.04, -0.013, -0.05, -0.063, respectively), and also between CDAS vs DVSS-SV (r=-0.05) (Table 5).

The mean anxiety score was significantly higher in children with dental trauma compare to children without dental trauma for CFSS-DS (p=0.001), PDAS (p=0.042), CDAS (p=0.01), CMFQ (p<0.001), and S-DAI (p=0.048). The mean DVSS-SV score was significantly higher in children without dental trauma (p<0.001). The children with dental trauma had a higher mean aggression scale (OAS) than those without dental trauma (2.43+/-2.40 vs. 1.37+/-1.56, p<0.001). The girls had significantly higher mean anxiety score than boys in all used questionnaires. The mean aggression score was significantly higher for boys than girls in both compared groups (p<0.001, and 0.003, respectively) (Table 6).

The Odds of the aggressive behavior in children with dental trauma (n=254) decrease for 0.95 when the value of the mean DVSS-SV scale is increased by 1 unit (OR=0.95, 95% CI 0.87 to 1.03, P=0.22), and increase for 1.04 when the means S-DAI score increased by 1 unit (OR=1.04, 95%CI 1.00 to 1.09, P=0.04). The odds of the aggressive behavior also increased for 1.04 when the mean score of CFSS-DS, PDAS, CDAS, and CMFQ increased by 1 unit, but not significantly (Table 7 and Diagram 3).

Discussion

Dental anxiety is a serious problem with negative impact in oral health of children. Many measurement instruments have been proposed to assess dental fear and dental anxiety. To assess the true nature of dental anxiety is very difficult, because it is a complex multifactorial phenomenon (6). Child's anxiety can be assessed with various measurement instruments, since different instruments might measure the different aspects of dental anxiety. Psychometric measures used for this purpose included several questionnaires. Child's and parental dental anxiety can assessed by using the Child's Fear Survey Schedule-Dental Subscale (CFSS-DS), the Corah Dental Anxiety Scale (CDAS, PDAS), and the Dental Anxiety Inventory-short version (S-DAI). Child's fear of medical treatment can be measured by the Broome's Child Medical Fear Questionnaire (CMFQ). Child's aggression can be evaluated by the Overt Aggression Scale (OAS). Socioeconomic status can be evaluate by Hollingshead Index of Social Position (ISP index), and the child-dentist's relationship can be evaluated by the Dental Visit Satisfaction Scale-Swedish Version (DVSS-SV) (1, 14, 15, 16). To provide more precise and thorough estimations for child's dental anxiety is necessary to combine different scales.

The CFSS-DS consist of 15 items scored on 5-Likert scales (1=not afraid at all to 5= very afraid) with 15-75 mini-

CFSS-DS preciznije mjeri dentalni strah i obuhvaća više situacija u stomatološkoj ordinaciji. Svi korišteni testovi bili su dovoljno pouzdani. Najveće vrijednosti Chronbachova alfa testa izmjerene su za S-DAI (0,991), CFSS-DS (0,974), PDAS (0,68) i OAS (0,961). Srednja vrijednost CFSS-DS-a za pacijente s pretrpljenom dentalnom traumom (20,44+/-8,50) u skladu je s dosadašnjim istraživanjima, ali je niža od istraživanja u Nizozemskoj (23,2) (17), Srbiji (26,47) (18) i Hrvatskoj (23,4 za dječake i 29,9 za djevojčice) (19). U našem istraživanju srednja vrijednost CFSS-DS-a za dječake bila je 19,23+/-6,30, a za djevojčice 22,17+/-10,72, odnosno srednja vrijednost anksioznosti bila je značajno veća kada je riječ o djevojčicama negoli o dječacima (p = 0,006). Naši su rezultati slični onima Tena Berge i suradnika (17), Maje i suradnika (18), Majstorović i suradnika (19) te Nakaija i suradnika (20). Neka istraživanja nisu pokazala značajnu razliku srednjih vrijednosti ankioznosti između dječaka i djevojčica (srednja vrijednost CFSS-DS-a za djevojčice u odnosu prema dječacima; 27,50+/-5,01 i 26,84+/-5,62, tim redom) (21). Prema rezultatima mnogih autora, zbog lošeg medicinskog iskustva djeca stvaraju negativne misli i očekivanja u vezi s dentalnim postupkom, odnosno osjećaju veći dentalni strah i anksioznost (10, 22).

Srednja vrijednost DVSS-SV-a bila je značajno veća za djecu bez dentalne traume (36,36+/-3,07 prema 35+/-3, p < 0,001). Djeca s pretrpljenom dentalnom traumom imala su veću srednju vrijednost na ljestvici za agresivno ponašanje (OAS) za razliku od one bez toga iskustva (p < 0,001). Ovo istraživanje također je pokazalo da je u obje skupine srednja vrijednost na ljestvici za agresivno ponašanje bila znatno veća u slučaju dječaka za razliku od djevojčica (p < 0,001 i 0,003). Slične rezultate dobili su i Majstorović i suradnici (19) prema čijem se stajalištu agresivno ponašaju ona dentalno anksiozna djeca koja imaju značajno niže DVSS-SV vrijednosti. Hakeberg i suradnici (16) pronašli su povezanost između dječjeg zadovoljstva stomatologom i dentalne anksioznosti. U svojem istraživanju Majstorović i suradnici (23) ističu da negativno medicinsko iskustvo znatno utječe na dentalnu anksioznost djece pa ona imaju veću sklonost prema agresivnom ponašanju, što potvrđuje Rachmanovu teoriju. Majstorović i suradnici (24) u svojem drugom istraživanju ističu da su vrijednosti dentalne anksioznosti (srednja vrijednost CDAS-a, CFSS-DS-a i CMFQ-a) veće kod djevojčica, kao i depresivni poremećaji.

Prema rezultatima iz CMFQ upitnika, strah od medicinskih intervencija u slučaju djece s pretrpljenom dentalnom traumom u snažnoj je korelaciji s dentalnom anksioznošću izmjerenom CFSS-DS upitnikom (r = 0,869), slično kao i za CDAS (r = 0,841), S-DAI (r = 0,832) te PDAS (r = 0,775). Slični rezultati dobiveni su u skupini bez dentalne traume. Majstorović i suradnici (19) ističu da su djeca s većim CMFQ-om (koja se više boje doktora i medicinskih intervencija) anksioznija – CMFQ vrijednost u značajnoj je korelaciji na razini od 0,01 za SDAS (0,563) i S-DAI (0,515). Također daju naslutiti da su veće vrijednosti anksioznosti (CDAS =14,31) zabilježene kad je riječ o djeci s velikim strahom od medicinskih intervencija (CMFQ = 22,08) (25). Majstorović i suradnici (23) u svojem drugom istraživanju, prema linearnoj regresijmal and maximal total score. It has been used in several countries. According to the report of Aartman et al (1), CFSS-DS was preferred, because measures dental fear more precisely, and covers more aspects of the dental situation. All used tests were found to be sufficiently reliable. The highest Cronbach alpha score were calculated for S-DAI (0.991), CFSS-DS (0.974), PDAS (0.968), and OAS (0.961). The mean CFSS-DS score for the patients with dental trauma in the present study (20.44+/-8.50) were in concordance with previous study, but was lower than the finding in Netherland (23.2) (17), Serbia (26.47) (18), and Croatia (23.4 for male and 29.9 for female) (19). In our study the mean score CFSS-DS for male was 19.23+/-6.30 and for female 22.17+/-10.72. The present study showed that mean anxiety score is significantly higher in girls than in boys (p=0.006). Our findings are similar to the findings of Ten Berge M et al (17), Maja L et al (18), Majstorovic et al (19), and Nakai et al (20). Some study had shown no significant difference in mean anxiety score between boys and girls (girl vs. boys mean CFSS-DS was 27.50+/-5.01, and 26.84+/-5.62, respectively) (21). According to the results of many authors, previous negative medical experiences at child create negative thoughts and expectations regarding the dental treatment, and so expressed higher dental fear and dental anxiety (10, 22).

The mean DVSS-SV score was significantly higher in children's without dental trauma (36.36+/-3.07 vs. 35+/-3, p<0.001). The children with dental trauma has a higher mean aggression scale (OAS) than those without dental trauma (p<0.001). The present study also showed that the mean aggression score was significantly higher for boys than girls in both compared groups (p<0.001, and 0.003, (respectively). Similar results are obtained by Majstorovic et al (19) according to which aggressive behaviors are present in dentally anxious children who have significant lower DVSS-SV score. Hakeberg et al (16) has found relationships between children's satisfaction with dentist and their dental anxiety. Majstorovic et al (23) also support Rachman's theory, because they found that previous negative medical experience had significant influence on children's dental anxiety and are more likely to show aggression behavior. Majstorovic et al (24) in their study show that dental anxiety scores (mean CDAS, CFSS-DS and CMFQ score) and total internalizing problems were higher in girls, as well as anxiety/depression disorders.

The results of the CMFQ questionnaire in the children with dental trauma showed that child fear from medical intervention was strongly correlated with dental anxiety measured by CFSS-DS questionnaire (r=0.869), similarly as CDAS (r=0.841), S-DAI (r=0.832) and PDAS (r=0.775). Similar results were obtained for the group of patients without dental trauma. Majstorovic et al (19) found that children with higher CMFQ, who are more afraid of doctors and medical intervention, are more dentally anxious; CMFQ score show significant correlation at the level 0.01 with SDAS (0.563) and S-DAI (0.515). Majstorovic et al (25) indicated that the higher anxious score (CDAS=14.31) in children with highest fear from medical intervention (CMFQ=22.08). Majstorovic et al (23) in his study, based on the linear regression analysis, found high correlation between previous traumatic medical

skoj analizi, navode veliku korelaciju između neugodnog medicinskog iskustva i dentalne anksioznosti te da dentalni strah ovisi o ranom negativnom medicinskom iskustvu.

U skupini djece s pretrpljenom dentalnom traumom pronađena je značajna korelacija između agresivnog ponašanja (OAS) i razine dentalne anksioznosti (Pearsonovi koeficijenti korelacije bili su 0,256, 0,249, 0,179, 0,161 te 0,123 za CFSS-DS, S-DAI, CDAS, CMFQ i PDAS, tim redom). Pojava agresivnog ponašanja rjeđa je kod djece s dentalnom anksioznošću koja imaju statistički značajno veće srednje vrijednosti DVSS-SV-a (r=-0,037). Slične rezultate dobili su Majstorović i suradnici u svojem istraživanju u kojem je ljestvica agresivnog ponašanja (OAS) bila u značajnoj korelaciji sa srednjim vrijednostima CDAS-a i S-DAI-a te srednjim vrijednostima između OAS-a i DVSS-SV-a. Važan čimbenik koji je utjecao na suradnju djeteta bilo je već stečeno neugodno dentalno iskustvo (26).

Zaključak

Standardni upitnici korišteni u ovom istraživanju pouzdani su i valjani psihometrički instrumenti za evaluaciju dentalne anksioznosti i problema u ponašanju djece. Ovi rezultati pokazuju da je srednja vrijednost anksioznosti značajno veća ako su djeca pretrpjela dentalnu traumu, te kad je riječ o djevojčicama i djeci koja se više boje medicinskih intervencija (CMFQ). Veću srednju vrijednost na ljestvici agresivnog ponašanja (OAS) imala su također djeca s dentalnom traumom, odnosno dječaci.

Pronađena je značajna korelacija između razine dentalne anksioznosti i pojave agresivnog ponašanja. Agresivno ponašanje bilo je niže samo kod anksiozne djece koja su imala statistički značajno veće srednje vrijednosti na ljestvici DVSS-SV-a. Vjerojatnost za agresivno ponašanje povećavala se kako su se povećavale srednje vrijednosti na svakoj ljestvici anksioznosti, ali ne značajno, osim za S-DAI vrijednosti.

Sukob interesa

Nije bilo sukoba interesa.

experience and dental anxiety, in which dental fear depends on early negative medical experience.

In children's with dental trauma significantly correlation was found between aggressive behavior (OAS) and dental anxiety level (Pearson's correlation coefficients were 0.256, 0.249, 0.179, 0.161 and 0.123 for CFSS-DS, S-DAI, CDAS, CMFQ, and PDAS, respectively).The aggressive behavior is lower in dentally anxious children who have statistically significant higher DVSS-SV mean scores (r=-0.037). Similar results are obtained by Majstorovic et al (23) in his study where aggression scale (OAS) shows significant correlation with the CDAS and the S-DAI mean score, as well as between the OAS score and DVSS-SV. Important factor which affect children's cooperative behavior is unpleasant previous dental experience (26).

Conclusion

Standard questionnaires used in our study are reliable and valid psychometric instruments for evaluation of dental anxiety as well as behavior problems in children. These results are demonstrating that the mean anxiety score was significantly higher in children with dental trauma, as well as the girls and boys who are more afraid of medical interventions (CMFQ). Also the children with dental trauma, respectively boys had a higher mean aggression scale (OAS).

Significant correlation was found between dental anxiety level and children aggressive behavior. The aggressive behavior is lower in dentally anxious children who have statistically significant higher DVSS-SV mean scores. The odds of the aggressive behavior increased with increasing of mean score of each anxiety measurement scale, but not significantly, except for S-DAI score.

Conflict of interest

None declared.

Abstract

Background and aim. Dental fear has a negative impact on the treatment outcomes. The aim of this study was to evaluate dental anxiety among children with different measurement scales, with the aim of getting more precise and thorough estimations, as well as correlation between anxiety scale and aggression scale in children with/or without dental trauma. **Material and methods.** The study population include 254 children's experience with dental trauma (59.1% male), and 251 children without dental trauma (46.6% male), between 7 and 14 years old, and their respective parents were evaluated during 2015-2016. Psychometric measures used for this purpose included several questionnaires. The result was tested with the X^2 test, Student's t-test, one-way ANOVA, and Pearson's correlation coefficient. The Cronbach alpha was used to check the reliability and validity of the measures. The predetermined significance levels were set at 0.05. **Results.** All used test has satisfactory reliability and validity of the scale. The mean anxiety score was significantly higher in children with dental trauma. The children with dental trauma had a higher mean aggression scale (OAS). The girls had significantly higher mean anxiety score than boys in all used questionnaires. The mean aggression score was significantly higher for boys than girls in both compared groups ($p<0.001$). The Odds of the aggressive behavior in children with dental trauma decrease for 0.95 when the value of the mean DVSS-SV scale is increased by one units, and increase for 1.04 when the means anxiety score increased by one units. **Conclusion.** The mean anxiety score was significantly higher in children with dental trauma, as well as the girls and children who are more afraid of medical interventions (CMFQ). Also the children with dental trauma, and boys had a higher mean aggression scale (OAS). Significant correlation was found between dental anxiety level and aggressive behavior of children's. The odds of the aggressive behavior increased with increasing of mean score of each anxiety measurement scale, but not significantly, except for S-DAI score.

Received: January 17, 2017
Accepted: March 1, 2017

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Key words
Tooth Injuries; Dental Anxiety; Aggression; Child

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